

CHAPTER IV.

AGRICULTURE.

ACCORDING to the 1881 census returns agriculturists supported about 612,000 people or seventy per cent of the population :

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BELGAUM AGRICULTURAL POPULATION, 1881.

Age.	Males.	Females.	Total.
Under Fifteen ...	121,133	113,240	234,373
Over Fifteen ...	186,776	191,153	377,929
Total ...	307,909	304,393	612,307

The bulk of the regular husbandmen are Lingáyats and Maráthás ; next in strength to Lingáyats and Maráthás come Jains, Musalmáns, Phangars, Mhárs, Berads, and Bráhmans. Husbandmen of the better class live in tiled houses, own £30 to £100 (Rs. 300-1000) worth of ornaments and metal vessels, and have grain enough in store to meet all demands for food and for seed. Sometimes they have a surplus which is lent on interest. The poorer class of husbandmen live in mud-roofed houses or in grass huts, own £5 to £10 (Rs. 50-100) worth of goods, and have a store of grain barely enough to keep them for half a year. During the remaining months they have either to work as labourers or to run into debt. All are well-behaved, orderly, and religious, and, except the poorer classes, are a little given to drinking, sober. Bráhmans, Lingáyats, and Jains are clean in their persons and in their houses ; most of the other classes are more or less dirty and untidy. On the whole they are thrifty. Though hardworking, especially in Belgaum and Khánápur, their character as husbandmen is not high. As a rule they are landholders or *khátedárs* who till their own land ; the rest are under-holders or labourers. As much land has passed into the hands of moneylenders there is a considerable body of under-holders. But these are not all dependent on the moneylender as well-to-do landholders or *khátedárs* not unfrequently, in addition to their own holdings which as a rule they inherit, become the tenants of a moneylender, and till part of his land either as sharers in the produce or on payment of a money-rent. During the off season, that is from about February to May, the ordinary husbandman uses his oxen and carts for carrying grain and other produce to the two great grain markets of Nipáni and Belgaum. He also makes considerable profit by carrying cotton to Vengurla in Ratnágiri whence there is always a large return traffic in salt for local use and in the stores required by the residents in the large civil and military station of

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Husbandmen.

Belgaum. Besides by carrying, the better class of husbandmen add to their income by moneylending, by the sale of dairy produce, and by cotton-spinning, cotton-ginning, and blanket-weaving. Poor husbandmen eke out their gains by fishing, hunting, and fowl-rearing. These additions to their incomes vary from £1 to £50 (Rs. 10 - 500). About twenty-five per cent of the husbandmen are free from debt; the remaining seventy-five per cent are indebted. This indebtedness is owing to expensive family ceremonies, law suits, crop failures, and unwillingness to part with their land. The amount of debt varies from £2 to £50 (Rs. 20-500). In almost all cases the indebtedness of husbandmen may be traced to family ceremonies. To meet the expenses which attend family ceremonies savings are spent, then the store of grain goes, next an ox or it may be a pair of oxen are sold, and last the family jewels are pawned. Stripped of his store of seed and food-grain, so soon as his stock of food is exhausted, the husbandman has to go to the moneylender. Once in the hands of the moneylender, charge gathers on charge, until the holding is mortgaged, at first without possession, but generally in the end possession passes to the lender. The moneylender's name appears in the Government books and the landholder sinks to a labourer. The yearly rates of interest vary from twelve to thirty per cent. Though in most parts of the district the people have to a great extent recovered from the 1876-77 famine, in Gokák and some other red and poor soils the effects of the famine are, in places, still apparent in ruined houses, in arable waste, and in impoverished husbandmen. Of late years the chief agricultural change has been the growing desire of the lending classes to get possession of land.

Soil.

Geologically the soils of the district may be divided into two classes, the red and the black. The red soils are primary soils, that is they are the direct result of the decomposition of the iron-bearing rocks. This variety of soil is generally found all along the western border; it also occasionally occurs in the plain country as in the tableland between the Ghatprabha and the Krishna, and in the Belavádi and Ambadgatti village groups or *khariyats* of Sampgaon. This red soil is mostly coarse and poor, and, as in these western parts the rainfall is plentiful, the chief products are the early, called the *khariif* (M. and H.) or *mungúri* (K.) crops. In parts of Athni red garden lands are watered from wells. The black soils are secondary soils, that is, they are rock-ruins changed by the addition of organic matter. The black soil is not solely the result of the weathering and enriching of the ruins of trap rocks. Black soil occurs as largely and as typically in tracts where the rock is gneiss as it occurs in tracts where the rock is trap. The black soil covers most of the plain country and is best suited for the growth of cotton, Indian millet, wheat, and gram. In east Gokák it is so rich as not to need fallows. The husbandmen by careful changes secure a yearly crop. In the north-east of the district, bordering on the Don, are loamy plains of noted richness. Only in seasons of extreme drought do the crops in these lands fail, and in average seasons the harvest is almost always fair. The black soil of the Krishna valley is of most uncertain depth, the waving trap lying sometimes several feet, at other times only a few inches below the surface. Near the sandstone hills in Chikodi,

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Gokák, and Parasgad, owing to the crumbling of the sandstone, the soil is little better than sand. This sandy soil does not want much rain, but it wants constant enriching, and, with the aid of manure, yields fair crops of cereals, pulse, and oilseeds. Locally the black soil is divided into four classes: *káli* or rich deep black, *movat* or red and black mixed of middling richness, *karak* or thin black ovenstone, and *mali* or alluvial which near the Krishna is of unusual richness. For cotton-growing the *káli* and the *movat* are grouped together as *regur* (Tel.) or pure black. Two other varieties of black soil are recognised, a brown less-matured *regur* and a gray-black largely mixed with lime nodules and with a layer of lime two to ten feet below the surface. The pure black soil is best suited for local cotton and the brown soil is best suited for American cotton of which very little is now grown; the gray-black soil is inferior to the other two. Kánarese husbandmen describe their cotton soil as *yera bhumi* or melted earth. The cotton soil is very dense and is improved by a mixture of sand and pebbles. Its chemical properties show that it contains all the elements of vigorous growth. Much of this land is very deep. Three feet and upwards is common, and depths of twelve or fifteen feet and even of thirty and forty feet are not unusual.¹

The revenue survey returns give Belgaum an area of 2,979,840 acres. Of these 1,163,738 or 39·05 per cent are alienated, paying Government only a quit-rent; 1,179,300 acres or 39·57 per cent are arable; 398,720 acres or 13·38 per cent forest; 156,572 or 5·25 per cent unarable waste; and 81,510 acres or 2·73 per cent village sites and roads. Of 1,179,300, the total Government arable area, 1,072,820 acres or 90·97 per cent were in 1881-82 held for tillage. Of this 7860 or 0·73 per cent were garden land; 53,600 or 4·99 per cent rice land; and 1,011,360 or 94·27 per cent dry-crop land.

Arable Area.

In 1881-82 the total number of holdings, including alienated lands in Government villages, was 63,201 with an average area of 25·50 acres. Of the whole number of holdings 8904 were of not more than five acres, 11,079 were of five to ten acres, 18,902 of ten to twenty acres, 18,207 of twenty to fifty acres, 4343 of fifty to a hundred acres, 1304 of 100 to 200 acres, 378 of 200 to 500 acres, sixty-four of 500 to 1000 acres, fourteen of 1000 to 2000 acres, and six of above 2000 acres. Of holdings above 500 acres, ten were in Chikodi, seventeen in Parasgad, twenty-three in Athni, twenty-eight in Gokák, and two each in Belgaum, Khánápur, and Sampgaon.

Holdings.

One pair of good oxen can work twelve to sixteen acres of dry-crop land and four to ten acres of garden land. In Chikodi and Athni the general practice in ploughing black soil, which when dry becomes very hard, is to use two to four pairs of bullocks. It

A Plough.

¹ An analysis of the best cotton soil showed, in 4500 grains, 3324 grains of very fine soil, 936 grains of impalpable powder, and 240 grains of coarse pebbles like jasper, with pieces like burnt tiles strongly retentive of moisture. The impalpable portion consisted of 18·000 grains of water, 0·450 of organic matter, 0·083 of chloride of sodium, 0·007 of sulphate of lime, 0·027 of phosphate of lime, 0·450 of carbonate of lime, 0·013 of carbonate of magnesia, 15·200 of peroxide of iron, 16·500 of alumina, 0·085 of potash, 48·000 of silica combined and free as sand, and 1·185 of loss. Walton's Belgaum and Kaláugi Cotton, 83.

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is roughly estimated that twenty to forty acres of the better class of dry-crop land or six to ten acres of garden might enable a cultivator to live like an ordinary retail dealer, and that, except in seasons of failure of rain, forty to sixty acres of dry-crop land or ten acres of rich garden land would enable him to support himself, his wife, and two children and one field-labourer comfortably without being obliged to have recourse to other work or to the moneylender.

Stock. According to the Collector's yearly returns the 1881-82 field stock included 60,204 ploughs; 22,510 carts, 206,313 bullocks, 127,089 cows, 138,719 buffaloes of which 89,975 were females and 48,744 males, 6218 horses mares and colts, 3598 donkeys, and 283,936 sheep and goats.

Field Tools. The chief field tools are, two kinds of plough the large or *negali* (K.) and the small or *ranti* (K.), the large hoe-harrow or *kunti* (K.), the seed-drill or *kurgi* (K.), the grubber or *yedi-kunti* (K.), the weeder or *belli-salla* (K.), and the pick-axe or *bāguḷli* (K.)

The Plough. Of the two ploughs the heavy or *negali* consists of a massive three-cornered block of very hard wood, rudely shaped by the village carpenter, so that the broad lower part forms the share on which a strong iron bar is fixed as a tongue. The hinder part under an acute angle forms the breast of the plough into which, near its upper end, a handle is let in from behind, while from the front side the plough-bar is fixed below the handle. This plough-bar consists of a somewhat bent or crooked beam, at least twelve feet long. It is laid on the necks of the rear pair of bullocks, which are always the strongest of the team. Instead of bullocks the rear pair are sometimes buffaloes which when well broken are heavier and steadier than bullocks. The team includes four, five, six, sometimes even eight pairs of bullocks, all harnessed with small cords to a long leather rope, which passes round the beam and the hinder part of the plough. An old man usually leads the team, while on the yoke of the third pair of bullocks a boy is seated, who with a strong leather whip belabours and urges the bullocks both before and behind him. This heavy plough is difficult to manage. In spite of every effort the ploughman is unable to keep it in anything like a straight line, while the acute angle between the share and the beam of the plough is constantly choked with earth. Still it is specially useful in bringing neglected black soil under tillage by uprooting the grass and weeds which stifle the crop. A heavy or *negali* plough costs 8s. to 16s. (Rs. 4-8) and is seldom owned by the poorer landowners. It turns over the soil to a depth of fifteen inches. Three ploughings are necessary, the first along, the second across, the third cornerwise. It takes about seven months to bring about twenty-four acres of black land under tillage. The light or *ranti* plough, costing about 4s. (Rs. 2), is used for ploughing the red and especially the sandy soils. It is of the same make as the big plough, but is so much smaller and lighter that the husbandman usually carries it to the field on his shoulder, and can work it with one pair of bullocks. It scratches the field three to six inches deep which in the red soil can be done only either immediately after harvest or when the occasional rains of March and April or the regular thunderstorms of May have again wetted the soil.

The hoe-harrow or *kunti* (K.) is a large rude tool. The chief part is a stout slightly crescent-shaped blade of iron about three feet long and four to five inches broad bladed on one side. This blade or cutting edge is turned forward and the ends are tightly fastened in stout timbers, which are again secured slopingly in a heavy bar of wood that has two narrowing poles passing to the yoke to which it is harnessed by strong leather ropes. This tool is drawn by three or four pairs of bullocks. As it moves the earth is forced between the iron knife and the bar of wood. On the wooden bar the driver and sometimes a second man or boy stand to make it heavier and force the blade deeper into the ground, so that the clods are completely cut and the grass and other weeds are rooted out and brought to the surface. The hoe-harrow is used both before and after ploughing ; it costs about 6s. (Rs. 3).

The seed is sown by the seed-drill, called *kuri* or *kurgi* (K.) a rude but a most suitable and simple contrivance. At the top it is a wooden cup pierced with a number of diverging holes. Into each hole the upper end of a hollow bamboo is fastened, whose under end is fixed into a wooden bill standing out from a wooden bar and armed with a small iron tongue. As the bullocks move the driver keeps feeding the cup with grain from a bag under his arm; the seed runs down the hollow bamboos, while the outstanding iron spikes at the lower end pass through the soil opening small furrows into which the seed drops. The number and the distance of the bills and the hollow bamboos vary according to the seed and also according to the soil. Through this drill all grains are sown. The seeds of the pulses and oilseeds called *akkadi* or mixed crops, which are sown in separate rows between the grain rows, are dropped through a supplementary thick hollow bamboo with a sharp point called in Kánarese *bukkada*, *kolu*, and *sudiki*. This thick bamboo is always tied to the drill and held by a ploughboy, who, walking some paces behind the drill, drops the pulse and oilseeds through the thick bamboo. If the pulse or oilseed ought to be unmixed with grain the corresponding hole in the cup is stopped. On account of its bulk and the greater distance between the rows cotton-seed is always sown through the extra big bamboos, two of which are fastened to the bar of the drill with only two furrowing bills and without the cup and its small hollow bamboos. The seed drill costs about 2s. (Rs. 1).

The grubber or *yedi-kunti* (K.) is used to clear grass and weeds between the rows of cotton, and to earth up the soil at the roots of the cotton plants. It is a kind of broad spud or share, made of iron, a little shorter than the distance between the cotton rows. The lower edge is sharp, and to each side of the spud a strong light bamboo is fastened to join it with the yoke. Two are worked together and the four bamboos are brought up at their proper place to the bullocks, the one bullock working between one set of rows, and the other between another set of rows, that is there is a row of cotton between them. The two grubbers clear the grass and weeds on either side of this row, and between it and the next, thus weeding two rows at a time. Near the handle of each grubber is a stick forked

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at the lower end and fastened by a rope to the horns of the bullocks. With these the driver can readily put on one side plants that come in the way of the machine, which, without this device, would be damaged. The grubber costs 2s. to 3s. (Rs. 1-1½).

The weeder or *belli-salla* (K.) is worth about 8s. (Rs. 4). It consists of two shares or spuds, one at each end of an arched crescent-shaped frame, whose arch passes over the row of corn, while the shares loosen the earth between the rows, tear up weeds, and heap the soil close to the roots of the seedlings.

The Hand-hoe.

The hand-hoe or *bāigudli* (K.) is a pickaxe with one end pointed and the other end bladed into a sharp adze. It is most effective in cutting and uprooting grass and other weeds after the land has been ploughed.

Carts.

Besides these field tools there are a weeding hook or *khurpi* worth 6d. (4 as.), a spade or *salki* worth 2s. 6d. (Rs. 1¼), an axe or *kodli* worth 2s. (Rs. 1), and a sickle or *kudgolu* worth about 1s. (8 as.). Sometimes for travelling in a large company within a narrow area, and almost always for bringing thrashed grain and loads of fodder to town, most well-to-do husbandmen have field carts. The field cart, which in Kánarese is called *hallibhandi*, is rudely shaped and heavy, requiring four to eight bullocks to drag it. It is nearly fourteen feet long and not more than four feet broad. The floor is made of two strong side bars of teak scarcely less than nine inches square joined by four cross pieces of about the same size, the spaces being filled either by planking or by small bamboos. The sides are generally temporary additions either of bamboo or of wicker work. The wheel is of solid wood, about four feet across, formed of two or three well-fitted sections, with edges three or four inches thick, and gradually thickening from the edge to the nave. It is generally of tamarind wood and is bound by a strong iron rim from two to two and a half inches thick. The nave is an iron cylinder. The whole machine is strong and well made and may last for nearly a century. It costs £6 to £8 (Rs. 60-80).

Irrigation.

¹The greater part of the arable land of Belgaum is under dry crops. Except along the banks of rivers and near ponds little land is watered. As so much of the land trusts solely to rain for its moisture the outturn varies greatly from year to year. Still, only in rare cases is the rainfall scanty enough to cause failure of food. In 1881-82 of 16,000 acres under irrigation, 15,870 were garden land and 130 were rice land. The total area of watered land bears a consolidated assessment of £5268 (Rs. 52,680) of which four-fifths are credited to Irrigation and one-fifth to Land. Except on land watered from the Gaddekeri or Swamp lake at Mugutkhán-Hubli in Sampgaon no separate water-rate is charged. In 1881-82, besides wells, there were 1055 water-works, including reservoirs, dips, and water-courses. Of these 377 are in Khánápur, 249 in Sampgaon, 190 in Chikodi, ninety-nine in Belgaum, eighty-three in Gokák, forty-five

¹ Except the account of the Gokák canal the irrigation section has been contributed by Mr. A. Clarke-Jervoise, C.S.